

What is claimed is:

1. A portable electric cutting device comprising:

a saw blade that cuts a cutting object in a cutting direction;

5 a casing that partially houses the saw blade; and

a base linked to the casing, the base having a bottom surface that slides on the cutting object, the bottom surface being formed with an opening through which the saw blade projects downward beyond the bottom surface, the  
10 bottom surface being formed with a first groove extended forward in the cutting direction from a front end of the opening to a front end of the base, the first groove being in fluid communication with the opening and being opened to the front end of the base.

15 2. The portable electric cutting device according to claim 1, further comprising a guide piece removably attached to the front end of the base for indicating a position of a blade edge of the saw blade, the guide piece having a bottom surface formed with a second groove that is in fluid  
20 communication with the first groove.

3. The portable electric cutting device according to claim 1, wherein the partition wall of the saw cover is further formed with a step at a first side, the step having a lower end that is located rear of the opening formed in  
25 the base with respect to the cutting direction.

4. The portable electric cutting device according to claim 3, further comprising a light irradiation device that irradiates the front end of the base and the cutting object in an area in front of the base in the cutting direction, wherein the partition wall of the saw cover is further formed with a recess at a second side opposite to the first side, and the step of the partition wall is formed as a result of forming the recess, the recess having a flat section extending in parallel with the saw blade, and the light irradiation device is attached to the flat portion of the recess.

5. The portable electric cutting device according to claim 1, wherein the first groove is located on an imaginary line extended in the cutting direction from the saw blade and has a width greater than a thickness of a blade edge of the saw blade.

6. The portable electric cutting device according to claim 5, further comprising a tilting mechanism arranged between the saw cover and the base, the tilting mechanism tilting the saw cover by a desired angle and supporting the saw cover at the desired angle, wherein the first groove is located on the imaginary line even when the saw blade is tilted by a maximum angle.

7. The portable electric cutting device according to claim 1, further comprising a cutting depth regulating

mechanism, wherein the saw cover is connected to the base at front and rear sides of the base, the saw cover being pivotable about a front end of the saw cover with respect to the base, and the cutting depth regulating mechanism is  
5 disposed between the rear side of the base and the saw cover for regulating a cutting depth by pivoting the saw cover about the front end of the saw cover relative to the base such that a rear end of the saw cover moves up and down, the cutting depth regulating mechanism supporting the saw cover  
10 at a desired position with respect to a pivotal direction of the saw cover.

8. The portable electric cutting device according to claim 1, further comprising a reinforcement member disposed on a top surface of the base, the reinforcement member  
15 extending between an area vertically above the first groove and an area vertically above where the first groove is not formed.

9. The portable electric cutting device according to claim 8, further comprising a tilting mechanism disposed  
20 between the saw cover and the front side of the base for tilting the saw cover by a desired angle with respect to a vertical direction and for supporting the saw cover at the desired angle, the tilting mechanism having a pin about which the saw cover tilts, the pin being held by the  
25 reinforcement member.

10. The portable electric cutting device according to claim 9, wherein the tilting mechanism further has a bevel plate projecting upward from the base and being formed with an arc-shaped hole centered at the pin and a locking screw  
5 engaged with the saw cover at a front end through the arc-shaped hole, the locking screw securing the saw cover at the desired angle when tightened, and the reinforcement member is linked to the bevel plate.

11. The portable electric cutting device according to  
10 claim 1, further comprising a fan that generates an air current as fanned air, wherein the casing includes a housing that houses the fan and a saw cover that includes a saw blade housing section that partially houses the saw blade, and the saw cover has a partition wall disposed between the  
15 fan and the saw blade housing section, the partition wall being formed with a plurality of division walls defining a plurality of discharge ports through which the fanned air generated inside the housing is discharged forward in the cutting direction toward the opening formed in the base,  
20 wherein the first groove is an air-passing groove.

12. The portable electric cutting device according to claim 11, further includes a motor that drives both the saw blade and the fan to rotate, the fan generates the fanned air to cool the motor.

25 13. The portable electric cutting device according to

claim 11, wherein: the fan rotates in a rotary direction to generate the fanned air; each of the plurality of division walls extends from a fan side to a saw-blade-housing-section side and has an upstream-side surface at an upstream side in the rotary direction of the fan; at least one of the division walls is a first division wall that has an inclined part whose upstream-side surface is inclined with respect to a rotary axis of the fan such that a saw-blade-housing-section-side section of the upstream-side surface locates downstream of a fan-side section of the upstream-side surface with respect to the rotary direction of the fan; and the fanned air generated inside the housing is discharged through the discharge ports into the saw blade housing section of the saw cover.

14. The portable electric cutting device according to claim 13, wherein each of the division walls has a downstream-side surface opposite to the upstream-side surface, the downstream-side surface being substantially parallel to the corresponding upstream-side surface.

15. The portable electric cutting device according to claim 13, wherein the first division wall is located at front side of the rotary axis of the fan with respect to the cutting direction.

16. The portable electric cutting device according to claim 13, wherein the first division wall has a flow rate

reducing part whose upstream-side surface extends substantially parallel to the rotary axis of the fan, the flow rate reducing part being disposed at the fan side whereas the inclined part is disposed at the saw-blade-housing-section side, wherein the inclined part is a guiding part extending at an angle with respect to the upstream-side surface of the flow rate reducing part.

17. The portable electric cutting device according to claim 16, wherein the flow rate reducing part is connected to the guiding part, and a boundary between the flow rate reducing part and the guiding part is in an angular shape without being chamfered.

18. The portable electric cutting device according to claim 16, wherein each division wall has a first end at the saw-blade-housing-section side and a second end at the fan side opposite to the first end, and the first end of the first division wall and the second end of an adjacent division wall located to the downstream side of the first division wall with respect to the rotary direction define a gap therebetween, the gap extending through the partition wall in a direction substantially parallel to the rotary axis of the fan.

19. The portable electric cutting device according to claim 18, wherein the gap is defined between the upstream-side surface of one first division wall and the downstream-

side surface of another first division wall adjacent to the one first division wall, the upstream-side surface of the one first division wall and the downstream-side surface of the another first division wall extend substantially in parallel with each other.

20. The portable electric cutting device according to claim 13, wherein at least one of the division walls is a second division wall located at rear side of the rotation axis of the fan with respect to the cutting direction, the upstream-side surface of each second division wall extends parallel to the rotation axis of the fan.

21. The portable electric cutting device according to claim 13, wherein the upstream-side surface of at least one division wall extends at an angle with respect to a radial direction of a rotary shaft of the fan such that a radially outer part of the upstream-side surface locates upstream from a radially inner part of the upstream-side surface with respect to the rotary direction of the fan.

22. The portable electric cutting device according to claim 21, wherein the upstream-side surface of any of the division wall extends at an angle with respect to the radial direction of the rotary shaft of the fan such that a radially outer part of the upstream-side surface locates upstream from a radially inner part of the upstream-side surface with respect to the rotary direction of the fan.

23. The portable electric cutting device according to claim 21, wherein the upstream-side surface of any of the division walls extends at the angle of 45 degree relative to the radial direction of the rotary shaft of the fan.

5 24. The portable electric cutting device according to claim 11, wherein the saw cover further includes another partition wall disposed between the housing and the saw cover housing section, the another partition wall extending at an angle with respect to the cutting direction such that  
10 the another partition wall is closer to the saw blade toward a radially outer end with respect to a radial direction of a rotary shaft of the fan.

25. The portable electric cutting device according to claim 24, wherein the division walls extend toward the  
15 opening formed in the base.

26. The portable electric cutting device according to claim 11, further comprising an air-blow regulating mechanism that selectively regulates the amount of fanned air that is discharged from the front end of the base  
20 through the first groove.

27. The portable electric cutting machine according to claim 26, wherein the air-blow regulating mechanism is provided to the base.

28. The portable electric cutting machine according to  
25 claim 27, wherein:



the bottom surface of the base is further formed with a guide groove that is in fluid communication with the first groove, the guide groove having substantially the same depth as the first groove; and

5        the air-blow regulating mechanism includes a shield member that is disposed in the guide groove, the shield member being slidable along the guide groove between a shield position where the shield member closes the first groove and a non-shield position where the shield member  
10       opens the first groove.

29. The electric portable cutting device according to claim 28, wherein the air-blow regulating mechanism further includes a fixing member that selectively fixes and releases the shield member to and from a desired position.

15       30. The electric portable cutting device according to claim 26, wherein:

the base is formed with a guide hole penetrating through the base, the guide hole being in fluid communication with the first groove;

20       the air-blow regulating mechanism includes a shield member and a positioning member;

the shield member is inserted into the guide hole and slides along the guide hole between a shield position where the shield member closes the first groove and a non-shield  
25       position where the shield member opens the first groove; and

the positioning member supports the shield member and positions the shield member to a desired position.

31. The electric portable cutting device according to claim 26, wherein:

5       the air-blow regulating mechanism includes a shield member and an attaching member, the shield member having a shield side and a non-shield side, the attaching member detachably attaches the shield member to the base selectively with the shield side facing toward the bottom  
10       surface of the base and with the non-shield side facing toward the bottom surface of the base;

      the shield member has a shield portion disposed on the shield side that closes the first groove when the shield member is attached to the base with the shield side facing  
15       toward the bottom surface, the shield portion having a width substantially equal to a width of the first groove with respect to a direction perpendicular to the cutting direction; and

      the shield member is formed with a third groove at the  
20       non-shield side, the third groove being in fluid communication with the first groove when the shield member is attached to the base with the non-shield side facing toward the bottom surface, allowing the fanned air to pass through the third groove and the first groove.

25       32. The portable electric cutting device according to

claim 24, wherein the air-blow regulating mechanism is provided to the saw cover.

33. The portable electric cutting device according to claim 32, wherein:

5           the saw cover includes a protruding member that protrudes toward the saw blade, the protruding member being formed with a slot extending in a direction perpendicular to the cutting direction;

          the air-blow regulating mechanism includes a shield  
10 member that slides along the slot between a shield position on an air path through which the fanned air is introduced into the first groove and a non-shield position off of the air path, wherein the shield member at the shield position prevents the fanned air from entering the first groove; and

15           the shield member has a L-shaped cross section having a first sliding part that slides along the protruding member and a second sliding part that slides along the saw cover.

34. The portable electric cutting device according to claim 33, wherein the air-blow regulating mechanism further  
20 includes a fixing member that selectively fixes and releases the shield member to and from a desired position.

35. The portable electric cutting device according to claim 32, wherein the saw cover is formed with a slot extending in the cutting direction, and the air-blow  
25 regulating mechanism includes a shield member that slides

along the slot between a shield position where the shield member covers the fanned air discharge ports and a non-shield position where the shield member uncovers the fanned air discharge ports.

5           36. The portable electric cutting device according to claim 35, wherein the air-blow regulating mechanism further includes a fixing member that selectively fixes and releases the shield member to and from a desired position.

10           37. The portable electric cutting device according to claim 32, wherein:

the saw cover is formed with a recess through which the fanned air is directed to the first groove;

the saw cover is formed with a slot; and

15           the air-blow regulating mechanism includes a shield member that slides along the slot between a shield position where the shield member closes the recess and a non-shield position where the shield member opens the recess.

20           38. The portable electric cutting device according to claim 37, wherein the air-blow regulating mechanism further includes a fixing member that selectively fixes and releases the shield member to and from a desired position.